QUIZ NAVIGATION

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Started on	Friday, 11 October 2024, 3:08 AM
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Completed on	Friday, 11 October 2024, 3:20 AM
Time taken	12 mins
Grade	**6.00** out of 10.00 (**60%**)

Question 1

ID: 50315

Correct

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CD is a 67-year-old male who approaches you at your clinic. His medical conditions include type 2 diabetes, hypertension, dyslipidemia and a new diagnosis of polymyalgia rheumatica. His medications include Janumet® (metformin 500 mg/sitagliptin 50 mg) 1 tablet PO BID, Altace® (ramipril) 2.5 mg PO once daily, Norvasc® (amlodipine) 2.5 mg PO once daily, Pravachol® (pravastatin) 40 mg PO once daily, Winpred® (prednisone) 15 mg PO once daily with supper, and vitamin D 2000 IU once daily.

CD has been having trouble sleeping over the past few weeks and wants to know if any of his medications cause insomnia. What do you tell CD?

Select one:

- None of CD's medications contribute to insomnia ✖
- Metformin may be contributing to CD's insomnia ✖
- Amlodipine may be contributing to CD's insomnia ✖
- Prednisone may be contributing to CD's insomnia ✔

Rose Wang (ID:113212) this answer is correct. Corticosteroids are known drug causes of insomnia.

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Insomnia

LEARNING OBJECTIVE:

To review secondary causes of insomnia.

BACKGROUND:

It is reported that approximately one-third of adults report symptoms of insomnia, with 6-10% of the general population meeting the criteria for diagnosis. Insomnia is more prevalent in females (1.4:1), in older adults particularly those with health conditions, and in patients with psychiatric or medical comorbidities. Risk factors include:

- Female sex (particularly peri- and post-menopausal)
- Older age
- Family history of insomnia
- Previous episode of insomnia
- Stress (e.g. major life events or chronic daily stress)
- Poor sleep hygiene practices (e.g. irregular sleep schedules)

Medical conditions causing insomnia include:

- Psychiatric disorders
- Cardiovascular disorders
- GI disorders
- Cancer
- Chronic pain
- Hormonal disorders
- Neurologic disorders

Drugs associated with insomnia include:

- CNS stimulants
  - Stimulants (e.g. amphetamines, methylphenidate, and modafinil)
  - Caffeine
  - Nicotine (and nicotine withdrawal)
- Respiratory drugs (e.g., theophylline, salbutamol, salmeterol, ipratropium and terbutaline)
- Corticosteroids

- Appetite suppressants
- Antidepressants e.g., bupropion, vilazodone, Selective Serotonin Reuptake Inhibitors ([SSRIs] especially fluoxetine and sertraline), Serotonin Norepinephrine Reuptake Inhibitors (SNRIs), Monoamine Oxidase Inhibitors (MAOIs)
- First Generation Antipsychotics (FGAs): low potency FGAs (e.g., chlorpromazine, methotrimeprazine) have a greater incidence of sedation compared to high potency FGAs (e.g., flupentixol, fluphenazine, haloperidol, pimozide, trifluoperazine)
- Second Generation Antipsychotics (SGAs) e.g., asenapine, aripiprazole, brexpiprazole, lurasidone, paliperidone, ziprasidone
- St. John's Wort
- Antihypertensives
  - Beta-blockers (e.g., metoprolol, propranolol)
  - Clonidine
  - Diuretics (increase nighttime urination)
  - Methyldopa
- Antiparkinsonian drugs (e.g., levodopa, selegiline, and amantadine)
- Antineoplastics (e.g., daunorubicin, flutamide, interferons, and leuprolide)
- Hormones (e.g., oral contraceptives, progesterone, medroxyprogesterone, and thyroid medications)
- Donepezil
- Phenytoin
- Lamotrigine
- Decongestants (e.g., pseudoephedrine and phenylephrine)
- Opioid withdrawal
- Alcohol
  - Acute intoxication can lead to increased wakefulness, restless sleep, and vivid dreams
  - Chronic use can lead to disrupted sleep in the second half of the night
- Cannabis
  - Tolerance to sedative effects develop with chronic use
  - Sleep disturbances and unpleasant dreams can persist for weeks upon withdrawal

RATIONALE:

Correct Answer:

- **Prednisone may be contributing to CD's insomnia** - Corticosteroids are known drug causes of insomnia.

Incorrect Answers:

- **None of CD's medications contribute to insomnia** - One of CD's medications contribute to insomnia.
- **Metformin may be contributing to CD's insomnia** - Metformin is not known to cause insomnia.
- **Amlodipine may be contributing to CD's insomnia** - Amlodipine is not known to cause insomnia.

TAKEAWAY/KEY POINTS:

Certain medications are associated with insomnia. These include CNS stimulants (e.g., amphetamine and methylphenidate), antidepressants, first- and second-generation antipsychotics, decongestants, and corticosteroids such as prednisone.

REFERENCE:

[1] Fleming JAE. Insomnia. In: Compendium of Therapeutic Choices. Canadian Pharmacists Association.

The correct answer is: Prednisone may be contributing to CD's insomnia

Question 2

ID: 50323

Correct

Flag question

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MM is a 86-year-old female who is a regular patient at your pharmacy. Her medical conditions include dyspepsia, gout, hypothyroidism, rheumatoid arthritis, history of stroke, dyslipidemia, and decreased upper gastrointestinal motility. Her medications include Pantoloc® (pantoprazole) 40 mg PO once daily, Lopressor® (metoprolol) 50 mg PO BID, Synthroid® (levothyroxine) 50 mcg PO once daily, Plaquenil® (hydroxychloroquine) 200 mg PO once daily, Plavix® (clopidogrel) 75 mg PO once daily, Zyloprim® (allopurinol) 100 mg PO once daily, Motilium® (domperidone) 10 mg PO TID before meals PRN, and vitamin D 1000 IU PO once daily.

She mentions that she has been having some difficulty sleeping and has tried improving her sleep hygiene by reducing caffeine and avoiding alcohol. She would like your help with an over-the-counter medication recommendation.

Select one:

- A. You recommend that she try diphenhydramine (Sleep Eze®) 30-60 minutes before bedtime as needed ✖
- B. You advise MM that her allopurinol may be contributing to her insomnia, so she should stop it ✖
- C. You recommend melatonin 30-60 minutes before bedtime ✔

Rose Wang (ID:113212) this answer is correct. Given that the patient is elderly and has already tried non-pharmacologic measures (reducing caffeine, avoiding alcohol), melatonin would be a good option for this patient.

- D. You recommend valerian 30-60 minutes before bedtime ✖

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Insomnia

LEARNING OBJECTIVE:

To review the over the counter options for insomnia and which may be best suited for an elderly patient.

BACKGROUND:

Melatonin is an endogenous hormone produced by the pineal gland in the brain. The main function of melatonin is to regulate the body's circadian rhythm, endocrine secretions, and sleep patterns. The use of melatonin supplements in insomnia remains controversial as there is limited evidence supporting its efficacy. A meta-analysis showed that melatonin decreased the time of sleep onset (~7 minutes), increased total sleep time (~8 minutes), and improved the overall quality of sleep. The benefit of melatonin is modest compared to other pharmacological options but may be considered given its relatively safe profile. The duration of treatment (short-term vs. long-term) is unclear as it has not been well studied; doses up to 8 mg daily have been shown to be safe for up to 6 months. Melatonin may be useful for sleep disturbances related to jet lag or shift work.
Valerian is another natural health product marketed for insomnia; however, the evidence supporting its use is weak. In Europe, there is a long history of using the extracts of the valerian root (a flowering plant) for its sedating properties. Reports of hepatotoxicity have been associated with valerian. Guidelines suggest against its use as the benefits do not outweigh the risks.
Although marketed as a non-prescription sleeping aid, diphenhydramine (Sleep Eze®) is not recommended for patient self-treatment of insomnia. Diphenhydramine (Sleep Eze®) is a first-generation antihistamine and can increase risk of cognitive impairment, dizziness, hangover effects, delirium, and falls. First generation antihistamines are on the Beers list and should be avoided due to anti-cholinergic effects. However, if patients are aware of the risks and would still like to try the medication, pharmacists have a duty to uphold patient autonomy.

RATIONALE:

Correct Answer:

- **You recommend melatonin 30-60 minutes before bedtime** - Given that the patient is elderly and has already tried non-pharmacologic measures (reducing caffeine, avoiding alcohol), melatonin would be a good option for this patient.

Incorrect Answers:

- **You recommend that she try diphenhydramine (Sleep Eze®) 30-60 minutes before bedtime as needed** - First generation antihistamines have anticholinergic side effects so should be avoided in the elderly.
- **You advise MM that her allopurinol may be contributing to her insomnia, so she should stop it** - Allopurinol is not a known cause of insomnia.
- **You recommend valerian 30-60 minutes before bedtime** - Due to the risk of hepatotoxicity and the limited efficacy associated with valerian, guidelines discourage its use for insomnia.

TAKEAWAY/KEY POINTS:

Diphenhydramine is on the Beers List and should be avoided in the elderly due to anti-cholinergic side effects. Melatonin is an endogenous hormone produced by the pineal gland in the brain. The benefit of melatonin is modest compared to other pharmacological options but may be considered given its relatively safe profile. The duration of treatment (short-term vs. long-term) is unclear as it has not been well studied; doses up to 8 mg daily have been shown to be safe for up to 6 months.

REFERENCE:

[1] Kim DD, Procyshyn RM, Barr AM. In: Compendium of Therapeutic Choices for Minor Ailments. Canadian Pharmacists Association. [2] Dopp JM, Phillips BG. Sleep-wake disorders. In: Dipiro JT, Yee GC, Posey LM, Haines ST, Nolin TD, Ellingrod V. Pharmacotherapy: A Pathophysiologic Approach. 11th ed. McGraw-Hill; 2020: chapter 89 [3] 2019 American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2019 updated AGS Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatric Soc. 2019; 67:674-694. doi: 10.1111/jps.15767.

The correct answer is: You recommend melatonin 30-60 minutes before bedtime

Question 3

ID: 50320

Correct

THE NEXT 3 QUESTIONS INCLUSIVE REFER TO THE FOLLOWING CASE:

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MI is a 60-year-old male with diabetes, depression, constipation and COPD. He takes the following medications:

- **Metformin 1000 mg PO BID**
- **Citalopram 20 mg PO once daily**
- **Sennosides 8.6 mg PO once daily**
- **Tiotropium bromide 18 mcg inhale the contents of one capsule daily**

MI is allergic to penicillin.

Two weeks ago, MI's divorce was finalized. He is finding it difficult to sleep every night and experiences frequent nocturnal awakenings. As a result, he wakes up feeling tired and is not able to concentrate at work. MI went to see his doctor who prescribed Imovane® (zopiclone) 3.75 mg PO QHS PRN.

What is the most appropriate action to take?

Select one:

- Dispense the drug and counsel the patient on zopiclone (Imovane®) and sleep hygiene ✔

Rose Wang (ID:113212) this answer is correct.
This is the most appropriate action to take.

- Refuse to fill the prescription and contact MI's doctor as there is a drug interaction between citalopram and zopiclone. ✖
- Refuse to fill the prescription and contact MI doctor as the dose is too high ✖
- Refuse to fill the prescription and contact MI's doctor as better alternatives exist ✖

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Insomnia

LEARNING OBJECTIVE:

Identify the most appropriate course of action when patients with insomnia present with prescriptions for hypnotics.

BACKGROUND:

Insomnia is when a patient has difficulty initiating, achieving or maintaining sleep. Often times insomnia results in poor sleep quality. If patients have been experiencing insomnia for more than a few days which has been distressing them significantly, they should see a physician to explore causes. First line pharmacological therapy includes a short course of a hypnotic drug such as short-acting benzodiazepines or benzodiazepine receptor agonists (e.g. zopiclone or zolpidem). Self-medication with over the counter drugs such as diphenhydramine is NOT recommended. Benzodiazepine receptor agonists act at a different site on the receptor than benzodiazepines but have similar effects in terms of side effects and therapeutic effects. Zopiclone is one such drug in this class. Side effects include hangover effects the next morning (e.g. feelings of drowsiness and grogginess), bitter taste, transient amnesia, and impaired cognitive function (especially in the elderly). Drug interactions include CYP 3A4 inhibitors and inducers, other CNS depressants (e.g benzodiazepines, alcohol, antidepressants, etc.). Management of drug interactions depends on the drug. For minor interactions such as other potential CNS depressants that the patient also needs, patients, can be counselled on what to look for and when to see a doctor. Other drug interactions that may significantly increase the plasma levels of zopiclone, such as CYP 3A4 inhibitors may require further action such as recommending a different drug to the physician. Zopiclone should be started at a low dose and titrated to effect as needed. The lowest effective dose should always be used.

RATIONALE:

Correct Answer:

- **Dispense the drug and counsel the patient on zopiclone (Imovane®) and sleep hygiene** - This is the most appropriate action to take.

Incorrect Answers:

- **Refuse to fill the prescription and contact MI's doctor as there is a drug interaction between citalopram and zopiclone.** - An interaction does exist with citalopram and zopiclone (Imovane®) since concomitant use of these two CNS depressants can increase the risk of psychomotor impairment, however, the best approach to this potential interaction is to tell the patient to monitor for psychomotor impairment.
- **Refuse to fill the prescription and contact MI doctor as the dose is too high** - This is an appropriate dose to start zopiclone treatment with.
- **Refuse to fill the prescription and contact MI's doctor as better alternatives exist** - Zopiclone (Imovane®) is one of the first-line drugs for insomnia.

TAKEAWAY/KEY POINTS:

Concurrent use of SSRIs and zopiclone can cause motor and cognitive impairment, and the patient should be appropriately counselled on this.

REFERENCE:

[1] Fleming JAE. Insomnia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists

Association. https://myrxtx.ca.

The correct answer is:
Dispense the drug and counsel the patient on zopiclone (Imovane®) and sleep hygiene

Question 4
ID: 50321
Incorrect
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All of the following are appropriate counselling points to tell MI about zopiclone, **EXCEPT**:

Select one:

- A. An adverse effect is bitter taste ✖

Rose Wang (ID:113212) this answer is incorrect.
Patients may notice a bitter taste after taking zopiclone.
Patients may notice a bitter taste after taking zopiclone.

- B. Use zopiclone only when a full night's worth (e.g., 8 hours) of sleep is possible ✖
- C. Zopiclone can impair cognitive function ✖
- D. Wait at least 8 hours after taking zopiclone to drive or operate machinery ✔

Incorrect
Marks for this submission: 0.00/1.00.

TOPIC: Insomnia

LEARNING OBJECTIVE:

Understand important counselling points for zopiclone.

BACKGROUND:

Zopiclone is a benzodiazepine receptor agonist used for the management of insomnia. It binds to a different part of the receptor than benzodiazepines but produces similar effects in terms of safety and efficacy.
Side effects include hangover effects the next morning (e.g. feelings of drowsiness and grogginess), bitter taste, transient amnesia, and impaired cognitive function (especially in the elderly). Patients need to make sure at least 12 hours pass between the time they took their dose and the time they do any activities that require them to be alert (e.g. driving). Doses should only be given when patients will get a full night's sleep (at least 8 hours). This is to minimize the risk of side effects upon awakening (e.g. cognitive impairment).
Drug interactions include CYP 3A4 inhibitors and inducers, other CNS depressants (e.g benzodiazepines, alcohol, antidepressants, etc.).
Management of drug interactions depends on the drug. If the patient needs to use other potential CNS depressants that have minor interactions with zopiclone, they should be counselled on what to look for and when to see a doctor. Other drug interactions that may significantly increase the plasma levels of zopiclone, such as CYP 3A4 inhibitors may require further action such as recommending a different drug to the physician.
Zopiclone should be started at a low dose and titrated to effect as needed. The lowest effective dose should always be used. The initial dose for zopiclone is 3.75mg QHS and can be titrated to 5-7.5mg QHS.

RATIONALE:

Correct Answer:

- **Wait at least 8 hours after taking zopiclone to drive or operate machinery** - Patients should wait at least 12 hours before operating machinery.

Incorrect Answers:

- **An adverse effect is bitter taste** - Patients may notice a bitter taste after taking zopiclone.
- **Use zopiclone only when a full night's worth (e.g., 8 hours) of sleep is possible** - If sleep hours are shorter than 8 hours, the patient may experience side effects, such as drowsiness and amnesia during the wake hours.
- **Zopiclone can impair cognitive function** - This is a side effect of zopiclone and an important point to mention, especially if the patient drives or operates machinery.

TAKEAWAY/KEY POINTS:

Patients need to make sure at least 12 hours pass between the time they took their dose and the time they do any activities that require them to be alert (e.g. driving).

REFERENCE:

[1] Fleming JAE. Insomnia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is:
Wait at least 8 hours after taking zopiclone to drive or operate machinery

Question 5
ID: 57469
Incorrect
Flag question

MI presents a few days later with a new prescription for clarithromycin 500 mg PO BID for 5 days.

What are some potential drug-drug interactions that can occur with zopiclone?

Send Feedback

Select one:

- Zopiclone is a CYP2D6 substrate and clarithromycin is a CYP2D6 inhibitor. This can lead to increased levels of zopiclone ✖

Rose Wang (ID:113212) this answer is incorrect. Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor.

- Zopiclone is a CYP2D6 substrate and clarithromycin is a CYP2D6 inhibitor. This can lead to decreased levels of zopiclone ✖
- Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to decreased levels of zopiclone ✖
- Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to increased levels of zopiclone ✔

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Insomnia

LEARNING OBJECTIVE:

To review the drug-drug interactions associated with drug therapy used for insomnia and to understand the impact of those interactions.

BACKGROUND:

Short courses (1-2 weeks) of first-line hypnotics (short-acting benzodiazepines or benzodiazepine receptor agonists with a Health Canada approved indication) can be considered as adjunctive therapy to CBT-I if CBT-I alone is ineffective or urgent relief is desired. The goal is to use the lowest effective dose for the shortest duration possible. The initial prescription quantity should be written for 7 days with no refills as this encourages the patient to return for follow-up. Encourage intermittent use when possible. If symptom relief is inadequate after the initial trial, a repeat 7-day course of first-line hypnotics can be considered. If sleeping patterns do not return to normal after two 7-day trials, the patient should be re-evaluated and referral to a sleep specialist should be considered. Guidelines suggest that pharmacotherapy should not be used longer than 4 weeks due to the risk of dependence and tolerance.

Benzodiazepine Receptor Agonists:

Benzodiazepine receptor agonists, including zopiclone and zolpidem, are both indicated for treatment of insomnia in Canada. Although based on low-quality evidence, guidelines suggest that zopiclone and zolpidem may reduce the time to falling asleep and improve the total sleep time. Zopiclone exhibits similar therapeutic and adverse effects to benzodiazepines but is associated with delayed tolerance and reduced rebound insomnia. Zopiclone can cause hangover effects leading to psychomotor impairment in the morning thus patients should be warned to avoid driving or operating machinery at least 12 hours after the bedtime dose. Zopiclone is a CYP3A4 substrate and can be prone to drug-drug interactions with CYP3A4 inducers and inhibitors. Compared to zopiclone, zolpidem appears to improve sleep to a similar extent with a potentially lower risk of a morning hangover effect (at least 7-8 hours of sleeping time recommended). However, reports of memory disturbances and complex sleep behaviours have been associated with zolpidem particularly in females and the elderly. Like benzodiazepines, both zopiclone and zolpidem have a risk of causing physical tolerance and dependence.

RATIONALE:

Correct Answer:

- **Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to increased levels of zopiclone** - Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to increased levels of zopiclone.

Incorrect Answers:

- **Zopiclone is a CYP2D6 substrate and clarithromycin is a CYP2D6 inhibitor. This can lead to increased levels of zopiclone** - Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor.
- **Zopiclone is a CYP2D6 substrate and clarithromycin is a CYP2D6 inhibitor. This can lead to decreased levels of zopiclone** - Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor.
- **Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to decreased levels of zopiclone** - Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to increased levels of zopiclone.

TAKEAWAY/KEY POINTS:

Zopiclone is a CYP3A4 substrate and can be prone to drug-drug interactions with CYP3A4 inducers and inhibitors. In the presence of CYP3A4 inducers, zopiclone is readily cleared, resulting in decreased serum levels of zopiclone. In the presence of CYP3A4 inhibitors, there is a decreased clearance of zopiclone, resulting in increased serum levels of zopiclone.

REFERENCE:

[1] Fleming JAE. Insomnia. In: Compendium of Therapeutic Choices. Canadian Pharmacists Association.

The correct answer is: Zopiclone is a CYP3A4 substrate and clarithromycin is a CYP3A4 inhibitor. This can lead to increased levels of zopiclone

Question 6

YH is a 33-year-old male with insomnia. He states that he has trouble staying asleep through the

ID: 9441

Correct

Flag question

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night. Some nights are frustrating for him because he will sleep for two hours, and will then be awake for the rest of the night and will have to go to work the next day. Tomorrow he has a very important presentation and really wants to sleep tonight for 8 hours straight.

What is the treatment of choice for YH?

Select one:

- a. Sleep hygiene ✖
- b. Triazolam ✖
- c. Flurazepam (Dalmane®) ✖
- d. Temazepam ✔ (Restoril®)

Rose Wang (ID:113212) this answer is correct. YH would benefit from Temazepam which can help with sleep maintenance without residual hangover effects.

Correct

Marks for this submission: 1.00/1.00.

LEARNING OBJECTIVE:

To determine the circumstances where one pharmacological agent is preferred over the others.

BACKGROUND:

Short courses (1-2 weeks) of first-line hypnotics (short-acting benzodiazepines or benzodiazepine receptor agonists with a Health Canada approved indication) can be considered as adjunctive therapy to CBT-I if CBT-I alone is ineffective or urgent relief is desired. The goal is to use the lowest effective dose for the shortest duration possible. The initial prescription quantity should be written for 7 days with no refills as this encourages the patient to return for follow-up. Encourage intermittent use when possible. If symptom relief is inadequate after the initial trial, a repeat 7-day course of first-line hypnotics can be considered. If sleeping patterns do not return to normal after two 7-day trials, the patient should be re-evaluated and referral to a sleep specialist should be considered. Guidelines suggest that pharmacotherapy should not be used longer than 4 weeks due to the risk of dependence and tolerance.

Benzodiazepines:

Although guidelines suggest consideration of benzodiazepines in patients whom CBT-I is inadequate, the evidence to support the effectiveness of benzodiazepines is insufficient. There are 4 benzodiazepines (flurazepam, nitrazepam, temazepam, triazolam) officially indicated for the treatment of insomnia in Canada. As a drug class, all benzodiazepines have sedating properties; however, differences are observed in their pharmacokinetic properties. Flurazepam and nitrazepam are not recommended due to their long half-lives particularly with the elderly population. This can result in accumulation with repeated dosing, more hangover effects, and higher risk of confusion and falls in the elderly. Temazepam is an appropriate treatment option for both initial (first third of night, difficulty falling asleep) and maintenance (last third of night, frequent or prolonged awakenings) insomnia and its use is supported by moderate quality evidence. Additionally, the half-life of temazepam is sufficient to cover the sleep period without causing hangover effects. Triazolam has a fast onset and short duration which may be suitable for treating initial insomnia but has a higher risk of abuse and dependence. Triazolam can also cause dose-related adverse effects of confusion, anterograde amnesia (difficulty retaining new information), and agitation thus making it unsuitable for the elderly. Although not officially indicated, oxazepam may be as effective as the benzodiazepines approved for insomnia. Oxazepam exhibits slow absorption and should be taken 60-90 minutes before bedtime when treating initial insomnia although some sedation can occur during this time. In maintenance insomnia, oxazepam can be taken at bedtime. Lorazepam has not been well studied for insomnia; however, it is also commonly used off-label. Lorazepam exhibits an intermediate-acting duration of action and has an intermediate onset but is associated with significant rebound insomnia (e.g. anxiety, tension) and anterograde amnesia at higher doses. Benzodiazepines have a risk of tolerance after long-term use, so it is important to re-evaluate benzodiazepine use and consider deprescribing whenever possible. In addition, patients can develop withdrawal upon discontinuation, so it is important to slowly taper off medications when deprescribing benzodiazepines. If deprescribing is not possible at this time, continue to re-evaluate the need for benzodiazepine on an ongoing basis.

Benzodiazepine Receptor Agonists:

Benzodiazepine receptor agonists, including zopiclone and zolpidem, are both indicated for treatment of insomnia in Canada. Although based on low quality evidence, guidelines suggest that zopiclone and zolpidem may reduce the time to falling asleep and improve the total sleep time. Zopiclone exhibits similar therapeutic and adverse effects to benzodiazepines but is associated with delayed tolerance and reduced rebound insomnia. Zopiclone can cause hangover effects leading to psychomotor impairment in the morning thus patients should be warned to avoid driving or operating machinery at least 12 hours after the bedtime dose. Compared to zopiclone, zolpidem appears to improve sleep to a similar extent with a potentially lower risk of a morning hangover effect (patients advised to wait at least 8 hours before operating machinery or driving). However, reports of memory disturbances and complex sleep behaviours have been associated with zolpidem particularly in females and the elderly. Like benzodiazepines, both zopiclone and zolpidem have a risk of causing physical tolerance and dependence.

RATIONALE:

Correct Answer:

(Option # 4): YH would benefit from Temazepam which can help with sleep maintenance without residual hangover effects.

Incorrect Answers:

(Option #1): While sleep hygiene is important to help manage insomnia, YH would benefit from a pharmacological agent to help with sleep maintenance for tonight.

(Option #2): Triazolam has a fast onset and short duration and would not be an appropriate option for patients who struggle with staying asleep.

(Option #3): Flurazepam is not recommended due to its long half-life, which can lead to drug accumulation and hangover effects.

TAKEAWAY/KEY POINTS:

Short courses (1-2 weeks) of first-line hypnotics (short-acting benzodiazepines or benzodiazepine receptor agonists with a Health Canada approved indication) can be considered as adjunctive therapy to CBT-I if CBT-I alone is ineffective or urgent relief is desired. Temazepam is an appropriate treatment option for both initial (first third of night, difficulty falling asleep) and maintenance (last third of night, frequent or prolonged awakenings) insomnia and its use is supported by moderate quality evidence. Additionally, the half-life of temazepam is sufficient to cover the sleep period without causing hangover effects.

REFERENCE:

[1] Sateia MJ, Buysse DJ, Krystal AD, Neubauer DN, Heald JL. Clinical practice guideline for the pharmacologic treatment of chronic insomnia in adults: an American Academy of Sleep Medicine clinical practice guideline. J Clin Sleep Med. 2017;13(2):307-349. doi: 10.5664/jcsm.6470.

The correct answer is: Temazepam (Restoril®)

Question 7

ID: 50317

Incorrect

Flag question

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THE NEXT 2 QUESTIONS INCLUSIVE REFER TO THE FOLLOWING CASE:

You are working as a clinical pharmacist at a family health team. One of the physicians phones you regarding a recommendation for one of his patients, SS. SS is a 28-year-old female patient who has been struggling with her sleep for the past month. She finds it difficult to fall asleep and to maintain sleep 4 nights per week. On average, she gets about 4-5 hours of sleep compared to her usual 7-8 hours of sleep. This makes her more irritable and distracted during the daytime at work. The physician has already recommended improving her sleep hygiene, but it did little to improve her sleep. He would like to try another agent for SS, but he wants to use a medication that is safe during pregnancy as SS is in her second trimester. SS's has a medical history of hypothyroidism and asthma. Her medications include levothyroxine 125 mcg 1 tablet PO daily, Flovent HFA® (fluticasone) 100 mcg inhale one puff BID, and salbutamol as needed.

Which medication would be the most preferred choice for SS?

Select one:

- Melatonin ✖
- Temazepam (Restoril®) ✖ — *Rose Wang (ID:113212) this answer is incorrect. Benzodiazepines are not the drug of choice due to the higher risk of abnormal prenatal and perinatal development.*
- Trazodone ✔
- Zolpidem (Sublinox®) ✖

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Insomnia management in pregnancy

LEARNING OBJECTIVE:

To review the pharmacological agents for insomnia management in pregnant women.

BACKGROUND:

Disrupted sleep is a frequent complaint during pregnancy and the postpartum period. Both endogenous (e.g., hormonal changes, frequent urination) and exogenous (e.g., frequent feedings) factors can contribute to sleep disturbances. There is insufficient research on this population. Based on clinical experience, CBT-I may be effective and should be considered first-line. If CBT-I alone is ineffective or if the insomnia is severe, consider the risk-to-benefit ratio of adding adjunctive pharmacological therapy (consider intermittent dosing with the lowest effective dose). From the limited data available, trazodone appears to be the preferred choice of hypnotic in pregnancy but should be used with caution. Benzodiazepines are associated with higher prenatal and perinatal risks (e.g., increased risk of oral cleft formation particularly in the first trimester) compared to zopiclone and neonatal withdrawal can occur if benzodiazepines are used late in pregnancy. The use of benzodiazepines is controversial; however, if necessary, consider short-acting agents and benzodiazepines with no active metabolites (e.g., lorazepam) to minimize the effects on the fetus. Zopiclone, zolpidem, and eszopiclone are not recommended in pregnancy and should only be used if the benefits outweigh the risks. There is no data available on the use of L-tryptophan and low-dose doxepin in pregnancy and thus should be avoided. Diphenhydramine can cross the placenta and, similar to recommendations in the general population, diphenhydramine is not advised for treating insomnia. Melatonin and valerian are not recommended in pregnancy. CBT-I is also the preferred choice of treatment for breastfeeding mothers. Low levels of benzodiazepines and benzodiazepine receptor agonists are present in breast milk and appear to be safe to use with close monitoring. The lowest effective dose of short-acting benzodiazepines and benzodiazepine receptor agonists should be used either intermittently or for short courses. L-tryptophan, low-dose doxepin, melatonin, and valerian should be avoided in breastfeeding.

RATIONALE:

Correct Answer:

- **Trazodone** - Trazodone is the preferred drug of choice for pregnant women, but should still be used with caution.

Incorrect Answers:

Incorrect Answers:

- **Melatonin** - Melatonin is not recommended during pregnancy due to the theoretical disruption of reproduction.
- **Temazepam (Restoril®)** - Benzodiazepines are not the drug of choice due to the higher risk of abnormal prenatal and perinatal development.
- **Zolpidem (Sublinox®)** - Zolpidem is not recommended as it has been associated with a higher risk of preterm delivery, cesarean delivery, and low birth weights.

TAKEAWAY/KEY POINTS:

Disrupted sleep is a frequent complaint during pregnancy and the postpartum period. Based on clinical experience, CBT-I may be effective and should be considered first-line. If CBT-I alone is ineffective or if the insomnia is severe, consider the risk-to-benefit ratio of adding adjunctive pharmacological therapy (preferably trazodone during pregnancy).

REFERENCE:

[1] Fleming J. Psychiatric Disorders: Insomnia. E-Therapeutics-Therapeutic Choices. Canadian Pharmacists Association. [2] Kim DD, Procyshym RM, Barr AM. In: Compendium of Therapeutic Choices for Minor Ailments. Canadian Pharmacist Association. [3] Benzodiazepines. E-Therapeutics-e-CPS. Canadian Pharmacists Association. [4] Management of Chronic Insomnia. CEP Providers. January 2017. https://tools.cep.health/wp-content/uploads/2021/07/CEP_Management_of_Chronic_Insomnia_2017.pdf [5] Bonnet MH, Arand DL. Treatment of insomnia. In: UpToDate. [6] Neubauer, D. Pharmacotherapy for insomnia in adults. In: UpToDate. [7] Pr ACT ZOPICLONE Monograph. Teva Canada Limited. Published online October 21, 2022. https://pdf.hres.ca/dpd_pm/00067928.PDF [8] Pr APO-ZOLPIDEM ODT Monograph. Apotex Inc. Published online JAN 27, 2023. https://pdf.hres.ca/dpd_pm/00069362.PDF [9] Pr APO-TRAZODONE Monograph. Apotex Inc. Published online November 21, 2017. https://pdf.hres.ca/dpd_pm/00042520.PDF

The correct answer is: Trazodone

Question 8
ID: 50318
Correct
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Suppose the physician prescribes SS zopiclone 3.75 mg take 1 tablet PO at bedtime.

When should we follow-up with SS to assess the effectiveness of the medication?

Select one:

- a. 1 week ✔ *Rose Wang (ID:113212) this answer is correct. One week is an appropriate timeframe to assess the effectiveness of a hypnotic agent.*
- b. 1 day ✖
- c. 2 weeks ✖
- d. 3 weeks ✖

Correct
Marks for this submission: 1.00/1.00.

TOPIC: Insomnia

LEARNING OBJECTIVE:

To review the monitoring parameters in order to determine the appropriate timeframe for assessing efficacy.

BACKGROUND:

Short courses (1-2 weeks) of first-line hypnotics (short-acting benzodiazepines or benzodiazepine receptor agonists with a Health Canada approved indication) can be considered as adjunctive therapy to CBT-I if CBT-I alone is ineffective or urgent relief is desired. The goal is to use the lowest effective dose for the shortest duration possible. The initial prescription quantity should be written for 7 days with no refills as this encourages the patient to return for follow-up. Encourage intermittent use when possible. If symptom relief is inadequate after the initial trial, a repeat 7-day course of first-line hypnotics can be considered. If sleeping patterns do not return to normal after two 7-day trials, the patient should be re-evaluated and referral to a sleep specialist should be considered. Guidelines suggest that pharmacotherapy should not be used longer than 4 weeks due to the risk of dependence and tolerance.

RATIONALE:

Correct Answer:

- **1 week** - One week is an appropriate timeframe to assess the effectiveness of a hypnotic agent.

Incorrect Answers:

- **1 day** - It can take up to a week to see improvement in sleep quality with the use of zopiclone.
- **2 week** - The goal is to use the shortest duration possible. Hypnotics are typically trialed for 1 week and can be repeated for another week if symptom relief is inadequate after 1 week.
- **3 weeks** - Only a short course (1-2 weeks) of hypnotic use is recommended for treating insomnia.

TAKEAWAY/KEY POINTS:

Short courses of first-line hypnotics (short-acting benzodiazepines or benzodiazepine receptor agonists) can be considered in patients with insomnia. The initial prescription quantity should be written for 7 days. If

symptom relief is inadequate after the initial trial, consider a repeat 7-day course of the first-line hypnotics.

REFERENCE:

[1] Sateia MJ, Buysse DJ, Krystal AD, Neubauer DN, Heald JL. Clinical practice guideline for the pharmacologic treatment of chronic insomnia in adults: an American Academy of Sleep Medicine clinical practice guideline. J Clin Sleep Med. 2017;13(2):307-349. doi: 10.5664/jcsm.6470.

The correct answer is: 1 week

Question 9

ID: 50325

Incorrect

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A 45-year-old female patient with a history of generalized anxiety disorder and occasional insomnia presents to your clinic seeking advice for her sleep disturbances. She reports difficulty falling asleep and staying asleep, with feelings of racing thoughts and restlessness at night. She states the lack of sleep is impacting her productivity at work. She began Cognitive Behavioural Therapy (CBT) 12 weeks ago for her generalized anxiety. She is not currently taking any medications.

Which of the following medication options, as a short course of therapy, would be the most appropriate initial choice for managing her insomnia?

Select one:

- Valerian root ✖
- Zopiclone ✖

Rose Wang (ID:113212) this answer is incorrect. Although zopiclone could be considered a first-line agent, due to the patient's generalized anxiety comorbidity, there is a better option for her insomnia.

- Temazepam ✔
- Continue with CBT alone ✖

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Prescription calculations

LEARNING OBJECTIVE:

To determine the circumstances where one pharmacological agent is preferred over the others.

BACKGROUND:

Short courses (1-2 weeks) of first-line hypnotics (short-acting benzodiazepines or benzodiazepine receptor agonists with a Health Canada approved indication) can be considered as adjunctive therapy to CBT-I if CBT-I alone is ineffective or urgent relief is desired. The goal is to use the lowest effective dose for the shortest duration possible. The initial prescription quantity should be written for 7 days with no refills as this encourages the patient to return for follow-up. Encourage intermittent use when possible. If symptom relief is inadequate after the initial trial, a repeat 7-day course of first-line hypnotics can be considered. If sleeping patterns do not return to normal after two 7-day trials, the patient should be re-evaluated and referral to a sleep specialist should be considered. Guidelines suggest that pharmacotherapy should not be used longer than 4 weeks due to the risk of dependence and tolerance.

RATIONALE:

Correct Answer:

- **Temazepam** - Temazepam is a good option for her acute insomnia as it also may help with her generalized anxiety.

Incorrect Answers:

- **Valerian root** - The evidence supporting valerian root use in insomnia is weak and guidelines do not suggest its use in insomnia as the benefits do not outweigh the risks.
- **Zopiclone** - Although zopiclone could be considered a first-line agent, due to the patient's generalized anxiety comorbidity, there is a better option for her insomnia.
- **Continue with CBT alone** - Short courses of first-line hypnotics can be considered as adjunctive therapy to CBT if CBT alone is ineffective or urgent relief is desired.

TAKEAWAY/KEY POINTS:

Patients with comorbid anxiety may benefit from the use of a benzodiazepine to help with insomnia.

REFERENCE:

[1] Sateia MJ, Buysse DJ, Krystal AD, Neubauer DN, Heald JL. Clinical practice guideline for the pharmacologic treatment of chronic insomnia in adults: an American Academy of Sleep Medicine clinical practice guideline. J Clin Sleep Med. 2017;13(2):307-349. doi: 10.5664/jcsm.6470.

The correct answer is: Temazepam

Question 10

ID: 50327

A 28-year-old pregnant woman, HH, in her first trimester, presents to the pharmacy with complaints of disrupted sleep due to hormonal changes and frequent urination. She has been using non-

Correct

Flag question

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pharmacologic techniques, but her sleep has still not improved. She is looking for a safe treatment option to improve her sleep quality. She has no allergies and her medications include a prenatal vitamin once daily.

Which pharmacological option should be recommended to her physician as the preferred choice for treating her insomnia?

Select one:

- Zolpidem ✖
- Trazodone ✔

Rose Wang (ID:113212) this answer is correct. Trazodone appears to be the preferred choice of hypnotic in pregnancy but should be used with caution.

- Lorazepam ✖
- Melatonin ✖

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Pharmacological therapy in pregnancy and breastfeeding

LEARNING OBJECTIVE:

To determine the circumstances where one pharmacological agent is preferred over the others.

BACKGROUND:

Disrupted sleep is a frequent complaint during pregnancy and the postpartum period. Both endogenous (e.g. hormonal changes, frequent urination) and exogenous (e.g. frequent feedings) factors can contribute to sleep disturbances. There is insufficient research on this population. Based on clinical experience, CBT-I may be effective and should be considered first-line. If CBT-I alone is ineffective or if the insomnia is severe, consider the risk-to-benefit ratio of adding adjunctive pharmacological therapy (consider intermittent dosing with the lowest effective dose). From the limited data available, trazodone appears to be the preferred choice of hypnotic in pregnancy but should be used with caution. Benzodiazepines are associated with higher prenatal and perinatal risks (e.g. increased risk of oral cleft formation particularly in the first trimester) compared to zopiclone and neonatal withdrawal can occur if benzodiazepines are used late in pregnancy. The use of benzodiazepines is controversial; however, if necessary, consider short-acting agents and benzodiazepines with no active metabolites (e.g. lorazepam) to minimize the effects on the fetus. Zopiclone, zolpidem, and eszopiclone are not recommended in pregnancy and should only be used if the benefits outweigh the risks. There is no data available on the use of L-tryptophan and low-dose doxepin in pregnancy and thus should be avoided. Diphenhydramine can cross the placenta and, similar to recommendations in the general population, diphenhydramine is not advised for treating insomnia. Melatonin and valerian are not recommended in pregnancy. CBT-I is also the preferred choice of treatment for breastfeeding mothers. Low levels of benzodiazepines and benzodiazepine receptor agonists are present in breast milk and appear to be safe to use with close monitoring. The lowest effective dose of short-acting benzodiazepines and benzodiazepine receptor agonists should be used either intermittently or for short courses. L-tryptophan, low-dose doxepin, melatonin, and valerian should be avoided in breastfeeding.

RATIONALE:

Correct Answer:

- **Trazodone** - Trazodone appears to be the preferred choice of hypnotic in pregnancy but should be used with caution.

Incorrect Answers:

- **Zolpidem** - Zolpidem is not recommended in pregnancy due to associations with higher risks of adverse outcomes, including preterm delivery, cesarean delivery, and low birth weights.
- **Lorazepam** - While short-acting benzodiazepines like lorazepam can be considered if necessary, benzodiazepines are associated with higher prenatal and perinatal risks, including an increased risk of oral cleft formation, especially in the first trimester.
- **Melatonin** - Melatonin is not recommended in pregnancy and breastfeeding.

TAKEAWAY/KEY POINTS:

From the limited data available, trazodone appears to be the preferred choice of hypnotic in pregnancy.

REFERENCE:

[1] Fleming J. Psychiatric Disorders: Insomnia. E-Therapeutics-Therapeutic Choices. Canadian Pharmacists Association.
[2] Kim DD, Procyshym RM, Barr AM. In: Compendium of Therapeutic Choices for Minor Ailments. Canadian Pharmacist Association.
[3] Benzodiazepines. E-Therapeutics-e-CPS. Canadian Pharmacists Association.
[4] Management of Chronic Insomnia. CEP Providers. January 2017. https://tools.cep.health/wp-content/uploads/2021/07/CEP_Management_of_Chronic_Insomnia_2017.pdf
[5] Bonnet MH, Arand DL. Treatment of insomnia. In: UpToDate.
[6] Neubauer, D. Pharmacotherapy for insomnia in adults. In: UpToDate.
[7] Pr ACT ZOPICLONE Monograph. Teva Canada Limited. Published online October 21, 2022. https://pdf.hres.ca/dpd_pm/00067928.PDF
[8] Pr APO-ZOLPIDEM ODT Monograph. Apotex Inc. Published online JAN 27, 2023. https://pdf.hres.ca/dpd_pm/00069362.PDF
[9] Pr APO-TRAZODONE Monograph. Apotex Inc. Published online November 21, 2017. https://pdf.hres.ca/dpd_pm/00042520.PDF

The correct answer is: Trazodone

Finish review